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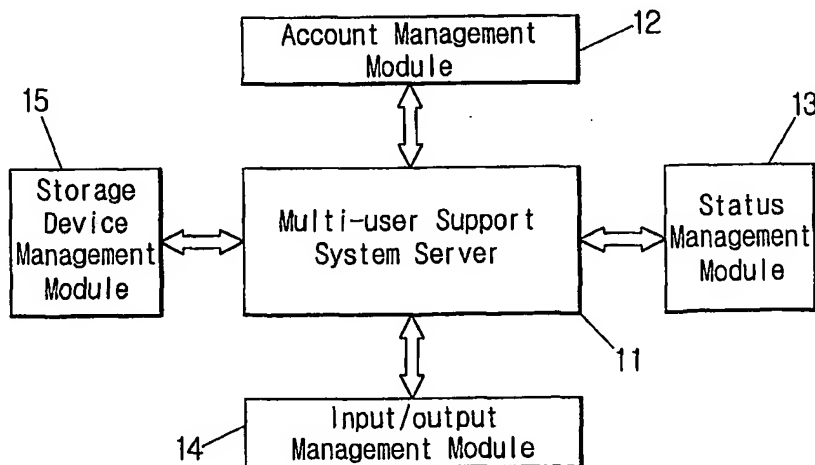
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(54) Title: MULTI-USER SUPPORT SYSTEM USING ONE COMPUTER MAIN FRAME



(57) Abstract: The present invention relates to a multi-user support system. More particularly, the present invention relates to a multi-user support system provided in one computer and configured to support a plurality of users to independently use the computer simultaneously. A multi-user support system according to a preferred embodiment of the present invention enables a plurality of users to use computer using one computer main frame. As a result, it became possible to cut down expenses of purchasing hardware and software and to reduce upgrade expenses. The multi-user support system according to the preferred embodiment of the present invention needs to include only input/output devices such as a monitor, a mouse and a keyboard and does not need extra main frames, thereby minimizing a workspace compared to a system equipped with a main frame. Thus, it became possible to overcome spatial limitation and increase work efficiency.

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MULTI-USER SUPPORT SYSTEM USING ONE COMPUTER MAIN FRAME

TECHNICAL FIELD

The present invention relates to a multi-user support system using a host
5 computer. More particularly, the present invention relates to a multi-user support
system in one computer main frame which enables a plurality of users to
independently use computers at the same time.

BACKGROUND ART

Up to now, it is general that as many computers as the number of users are
10 needed in order for the users to use computers and devices shared by a plurality of
users are nothing more than output devices such as a printer. Accordingly, each
user should possess all devices such as a monitor, a main frame, a mouse, a
keyboard, etc., so that it costs a lot in order for a plurality of users to independently
use computers. In particular, it is not effective to possess as many computers
15 whose programs' difficulty or frequency of use is fixed, in places where a plurality
of people come and go (such as front offices of stock markets, pharmacies, reading
rooms in libraries and hospitals), as the number of users. As development of
computer hardware and software progresses in very high speed, it is natural that
better hardware and software come out just a few months after purchasing a
20 computer. Thus, it requires a great expense to upgrade computer devices
according to high speed of development. Further, network devices are needed in a
case where a network is to be constructed to share data among users, so that it has

been an economical burden for users.

Further, there is too much spatial limitation to set up various devices when many users in limited space intend to use computers. To solve these problems, many computer manufacturing company have provided market with slim type
5 computers that does not occupy much space, however, the slim type computers are also expensive to be widely distributed.

Accordingly, development of a multi-user support system, which solves the above-described economical and spatial limitations and satisfies desires of many users, is needed. If it is made possible for many users to use computers only with
10 one computer main frame and a plurality of input/output devices, considerably positive effects will be obtained not only in expense but also in utilizing work space.

DISCLOSURE OF THE INVENTION

15 An object of the present invention is to overcome the above economical and spatial limitations by providing a multi-user support system which enables many users to independently use computers by connecting a plurality of input/output devices to one computer main frame.

To achieve the above object, a multi-user support system according to the
20 present invention includes: a multi-user support system server; an account management module; a status management module; an input/output management module; and a storage device management module and the multi-user support system is in a host computer connected to a plurality of stations made up of input/output devices such as a monitor, a mouse, a keyboard, etc.

A multi-user support system according to the present invention is provided in a host computer connected to a plurality of stations including input/output devices such as a monitor, a mouse, a keyboard, etc. and includes: a multi-user support system server for commanding to give the plurality of stations accounts, to
5 manage whether or not the stations are connected and to manage input/output commands from each station; an account management module connected to the multi-user support system server with a signal system, for giving each station accounts to separately recognize the plurality of stations and managing information on accounts of each station; a status management module connected to the multi-
10 user support system server with a signal system, for managing status of connection among the plurality of stations and the host computer; an input/output management module connected to the multi-user support system server with a signal system, for receiving input commands from each station and output commands to each station and preventing crash of each command by setting up priorities of the commands;
15 and a storage device management module connected to the multi-user support system server with a signal system, for storing information inputted from each station in a storage device of the host computer and outputting information from the storage device of the host computer to each station when output command of the information is received.

20 The status management module informs the multi-user support system server of disconnection among the host computer and any one of input/output devices of the stations in the real time, when disconnection among the host computer and any one of the input/output devices of the stations happens.

25 BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 illustrates a multi-user support system using one computer main frame according to the present invention in a host computer connected to a plurality of stations.

Figure 2 illustrates inner configuration of a multi-user support system using one computer main frame according to the present invention.

Figure 3 illustrates a preferred embodiment of device configuration of a multi-user support system using one computer main frame according to the present invention.

Figure 4 illustrates an USB hub illustrated in Figure 3 in detail.

Figure 5 illustrates that different screens are displayed by a multi-user support system using one computer main frame according to the present invention.

Figure 6 illustrates a screen that displays device configuration of a multi-user support system using one computer main frame according to the present invention.

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BEST MODE FOR CARRYING OUT THE INVENTION

Hereinafter, a detailed explanation will be given with reference to the attached drawings as to a multi-user support system according to the present invention.

Figure 1 illustrates a multi-user support system using one computer main frame according to the present invention in a host computer connected to a plurality of stations.

The multi-user support system 1 according to the present invention is in a host computer 2 and the plurality of stations 3 connected to the host computer 2 are

supported by the multi-user support system 1 of the present invention, which enables many users to independently use computers.

For connecting the plurality of stations 3 to the host computer 2 equipped with the multi-user support system 1 of the present invention, the plurality of
5 stations 3 are connected to the host computer 2 by appropriate connecting means such as USB ports.

Desirable conditions for operating the multi-user support system 1 are a CPU having processing speed over Pentium III 500MHz, a RAM having memory capacity over 128MB, a hard disk having storage capacity over 20GB, a computer
10 main frame equipped with more than 3 PCI slots and more than one USB port, stations equipped with an USB type keyboard and a mouse, and operating system such as Windows 2000 Professional or Windows 2000 Server.

The operating system such as the Windows 2000 can regulate authorities of users corresponding to own account such as an administrator account and an user
15 account. Because only administrator account can modify operating system files, establish system service and perform all functions supported by operating system, it is made possible for a plurality of users to independently use computers using one host computer, equipped with the multi-user support system, having the administrator account.

20 Figure 2 illustrates inner configuration of a multi-user support system using one computer main frame according to the present invention.

A multi-user support system using one computer main frame according to the present invention includes: a multi-user support system server 11; an account management module 12; a status management module 13; an input/output
25 management module 14; and a storage device management module 15.

The multi-user support system server 11 controls the account management module 12 to manage accounts (for example, to give accounts to each station connected to a host computer, to give new account to a station newly connected to the host computer, etc.). The accounts given to each station connected to the host computer are user accounts and administrator account is not given to each station.

Also, the multi-user support system server 11 controls the status management module 13 to check status of connections among each station and the host computer and to check whether there is a station newly connected to the host computer. As a result, if a station is newly connected to the host computer or a station is disconnected from the host computer, the status management module 13 detects the connection or disconnection and informs the multi-user support system server 11 of the connection or the disconnection in the real time.

The multi-user support system server 11 informed of the connection and the disconnection by the status management module 13, informs the account management module 12 of the connection and disconnection and commands the account management module 12 to give a new station new account or to delete given account. Due to this, the multi-user support system according to the present invention can easily disconnect or connect a station.

Also, the multi-user support system server 11 controls the input/output management module 14 to manage processing sequence to smoothly perform tasks inputting information from each station or outputting information to each station, without crash. The functions of the input/output management module can be easily implemented through operating systems supporting multi-task operations such as Windows 2000.

Also, the multi-user support system server 11 controls the storage device

management module 15 to store information inputted from each station in a storage device of the host computer and to output the information from the storage device of the host computer to the corresponding station when an output of the information is commanded.

5 The account management module 12, the status management module 13, the input/output management module 14 and the storage device management module 15 are connected to the multi-user support system server 11 with a signal system, so that they receive commands from the multi-user support system server 11 and function for the multi-user support system in response to the commands.

10 Figure 3 illustrates a preferred embodiment of device configuration of a multi-user support system using one computer main frame according to the present invention.

A host computer 21 includes a monitor, a main frame and a keyboard as with general computers. Each station 22, 23, 24 not equipped with a main frame is
15 connected to the host computer 21. A station 2 (23) and a station 3 (24) are connected to the host computer 21 by USB hub 25.

A mouse and a keyboard of a station 1 (22) are directly connected to USB ports mounted on front part of the host computer's main frame. This reflects a trend that USB ports are mounted on front part of a main frame or on a monitor.

20 The number of stations in device configuration equipped with a multi-user support system according to the present invention illustrated in Figure 3 is just illustrative, for convenience of explanation. More than three stations can be connected to the host computer.

Figure 4 illustrates an USB hub illustrated in Figure 3 in detail.

25 Because general computer has two USB ports, USB hub 25 illustrated in

Figure 4 is needed to have more than two USB ports. The USB hub 25 has four USB ports 26, 27, 28, 29, so that it has four inputs from outside. A keyboard and a mouse of station 2 (23) are connected to the USB ports 26, 27 and a keyboard and mouse of station 3 (24) are connected to the USB ports 28, 29.

5 It is general that USB hub can have additional connections up to 127 because the USB hub can have a number of USB ports. To increase the number of users supported by the multi-user support system, USB hub having as many USB ports as the number of users can be used.

 In a case where USB port is mounted on a keyboard, the number of USB
10 ports, that the USB hub should include, decreases. In other words, as illustrated in Figure 3, in a case where three stations are used and keyboards of stations 2 (23) and station 3 (24) have USB ports, the station 2 and the station 3 can be supported by connecting each mouse of the station 2 and the station 3 to each keyboard thereof. It is possible to add a new station (for example, station 4) without new
15 USB hub by using two USB ports among four USB ports of the USB hub 25.

 Figure 5 illustrates that different screens are displayed by a multi-user support system using one computer main frame according to the present invention. It is illustrated through each monitor that different tasks are independently performed at host computer and each station.

20 A monitor of the host computer 31 displays analysis of stock prices of this month, however, monitors of stations 32, 33 display respectively a document being edited and a car. As described above, many users can independently use computers by using one computer main frame according to multi-user support system of the present invention. This is because just 10 percent to 20 percent of
25 performance of CPU in a main frame is used when word processing or using

internet. Further, there is no probability of decrease of processing speed due to operations of a plurality of stations.

Figure 6 illustrates a screen displaying device configuration of a multi-user support system using one computer main frame according to the present invention.

5 Figure 6 illustrates a resource manager window implemented by a multi-user support system using one computer main frame according to the present invention. The resource manager window shows that four stations are connected to a host computer. By providing information on video card, keyboard, mouse, audio card, etc. of the host computer and each station through the resource manager
10 window, it is possible to manage the host computer and the stations.

INDUSTRIAL APPLICABILITY

According to a multi-user support system using one computer main frame of the present invention, it is possible for many users to use computers using one
15 computer main frame, so that the users can cut down on purchasing expense of hardware and software comparing with a case where the users purchase own computers, and it is possible to cut down on upgrade expense.

Further, a multi-user support system using one computer main frame of the present invention just needs input/output devices such as a monitor and a keyboard
20 without an extra main frame, so that work space can be minimized, comparing with a case where the extra main frame is used, to overcome spatial limitation and to increase work efficiency.

Further, a multi-user support system using one computer main frame of the present invention can response in the real time when disconnection of stations and

connection of a new station happens, so that it is comfortable to remove or add stations.

WHAT IS CLAIMED IS:

1. A multi-user support system using one computer main frame, provided in a host computer connected to a plurality of stations including input/output devices such as a monitor, a mouse, a keyboard, etc., comprising:

5 a multi-user support system server for commanding to give the plurality of stations accounts, to manage whether or not the stations are connected and to manage input/output commands from each station;

an account management module connected to the multi-user support system server with a signal system, for giving each station accounts to separately recognize
10 the plurality of stations and managing information on accounts of each station;

a status management module connected to the multi-user support system server with a signal system, for managing status of connection among the plurality of stations and the host computer;

an input/output management module connected to the multi-user support
15 system server with a signal system, for receiving input commands from each station and output commands to each station and preventing crash of each command by setting up priorities of the commands; and

a storage device management module connected to the multi-user support system server with a signal system, for storing information inputted from each
20 station in a storage device of the host computer and outputting information from the storage device of the host computer to each station when output command of the information is received.

2. The multi-user support system using one computer main frame of claim

1, wherein the status management module informs the multi-user support system server of disconnection among the host computer and any one of input/output devices of the stations in the real time, when disconnection among the host computer and any one of the input/output devices of the stations happens.

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Fig.1

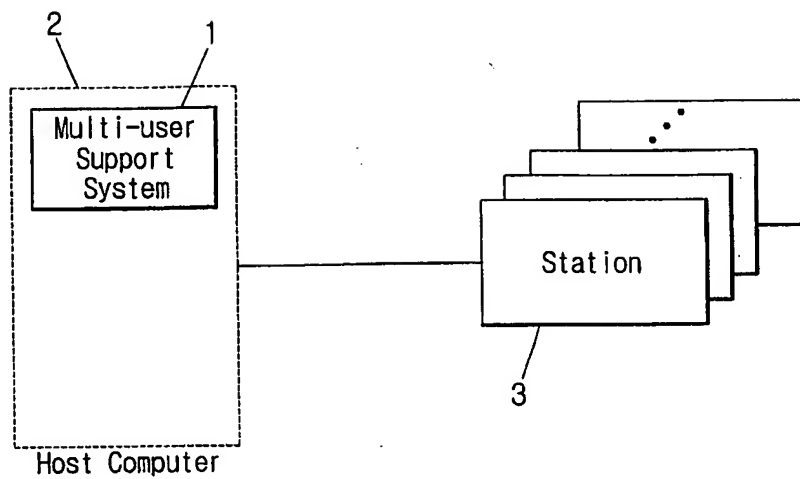
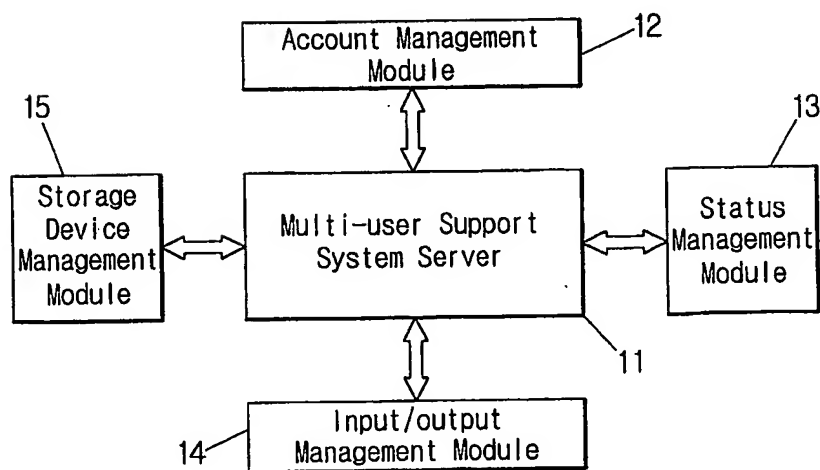
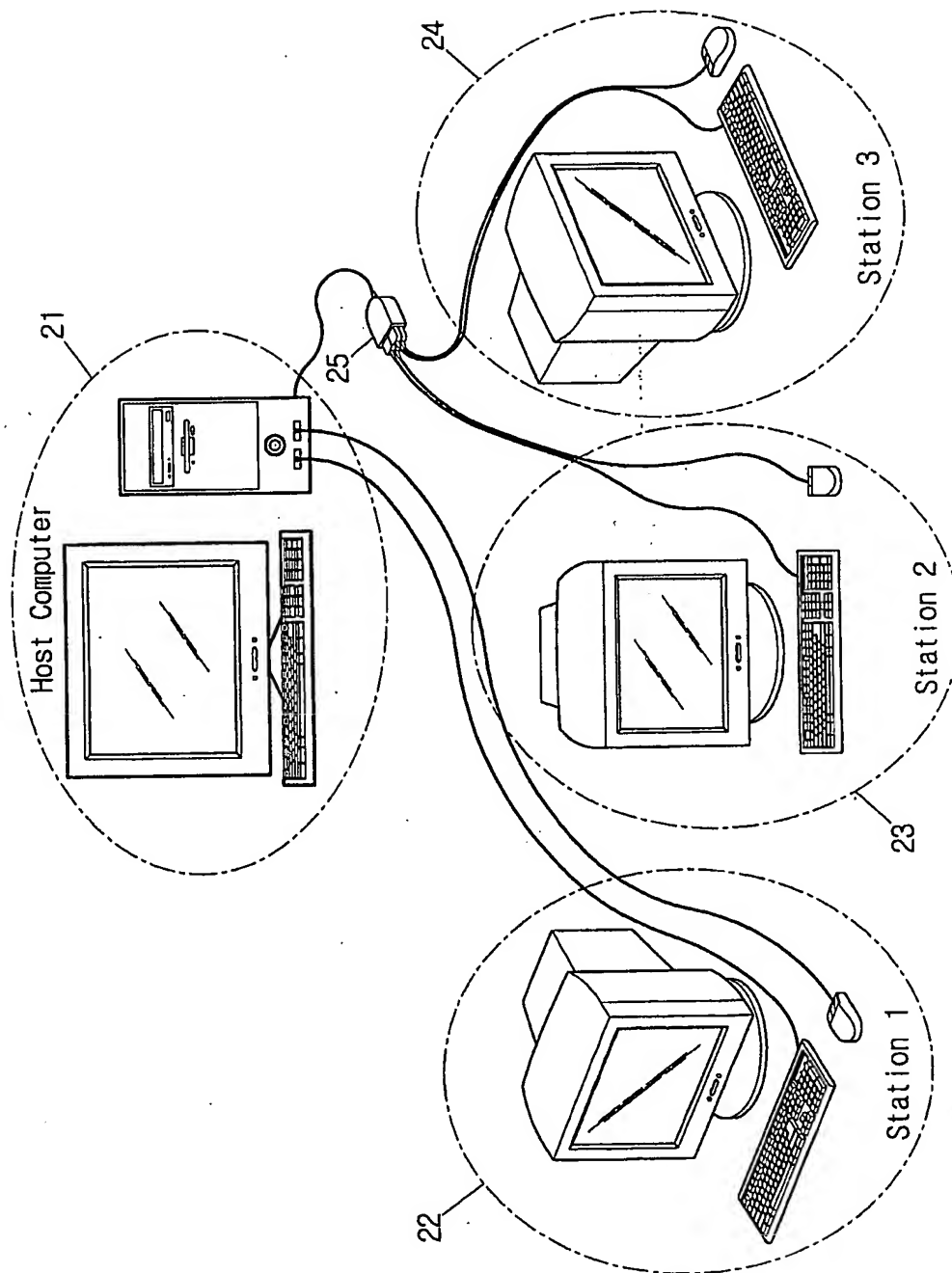


Fig.2



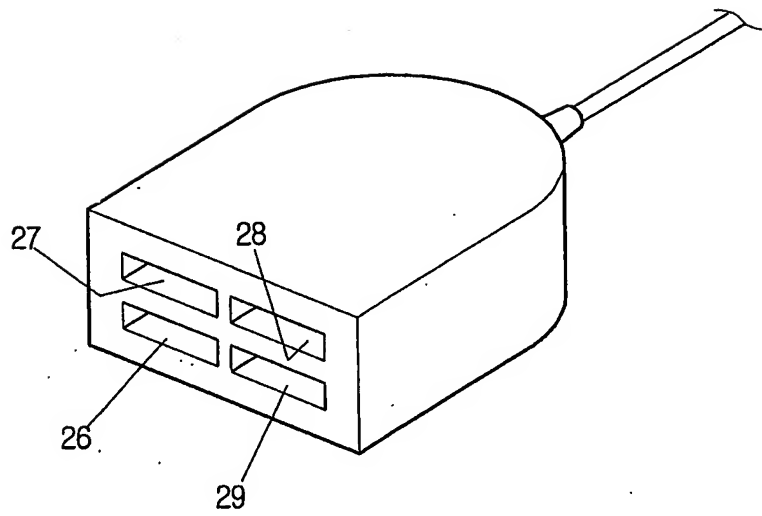
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Fig.3



3/5

Fig.4



4/5

Fig.5

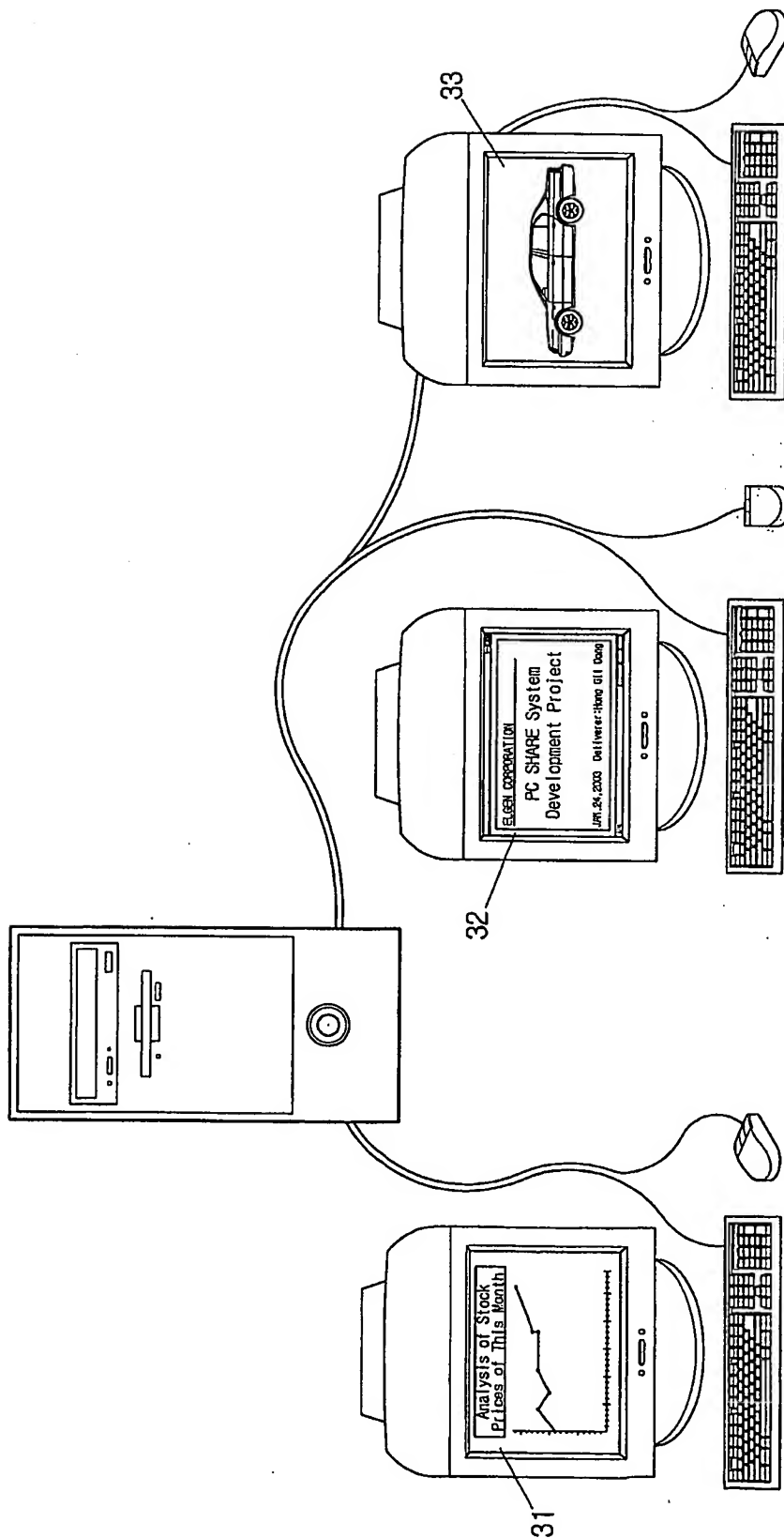



Fig.6

AMUSE - Resource Manager				
File		Edit	View	Station
✂				
Name		Original	HD Index	
AMUSE				
Host		Host	#Device#Video0	
Station1		Station1	#Device#Video1	
Station2		Station2	#Device#Video2	
Station3		Station3	#Device#Video3	
Station4		Station4	#Device#Video4	
Standard PS/2 Keyboard		Host	#Device#KeyboardClass0	
HID Keyboard Device		Station4	#Device#KeyboardClass1	
HID Keyboard Device		Station3	#Device#KeyboardClass2	
HID Keyboard Device		Station2	#Device#KeyboardClass3	
HID Keyboard Device		Station1	#Device#KeyboardClass4	
PS/2 Compatible Mouse		Host	#Device#PointerClass0	
HID-compliant Mouse		Station4	#Device#PointerClass1	
HID-compliant Mouse		Station3	#Device#PointerClass2	
HID-compliant Mouse		Station2	#Device#PointerClass3	
HID-compliant Mouse		Station1	#Device#PointerClass4	
Avance AC'97 Audio		Host	PCI#VEN_8086&DEV_24C5&...	
USB Audio		Station1	USB#VID_0A92&PID_0051&M...	
USB Audio		Station2	USB#VID_0A92&PID_0051&M...	
USB Audio		Station3	USB#VID_0A92&PID_0051&M...	
USB Audio		Station4	USB#VID_0A92&PID_0051&M...	

Ready

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR03/00578

A. CLASSIFICATION OF SUBJECT MATTER		
IPC7 G06F 15/16		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
IPC7 G06F 1/00, G06F13/00, G06F13/00, G06F 15/16		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
KOREAN PATENTS AND APPLICATIONS FOR INVENTIONS SINCE 1975		
KOREAN UTILITY MODELS AND APPLICATIONS FOR UTILITY MODELS SINCE 1975		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
KIPO-NET, ESPACE, DELPHION "computer <and> hardware <and>(remote <or> share <or> distributed) "		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KR 1995-3879B1 (KIM SEOKIL ET AL) 20 April 1995 (1995. 4. 20) * whole document *	1,2
Y	KR 20-221081Y1 (KIM HONG) 7 February 2001 (2001. 2. 7) * whole document *	1,2
Y	KR 2003-5580A(KIM HANGYOO) 23 January 2003 (2003. 1. 23) * whole document *	1,2
Y	JP 10-091586A2 (KITAGAWA NORIAKI) 10 April 1998 (1998. 4.10) * abstract, claim 2, figure 1, 4*	1,2
A	JP 10-207809A2 (HITACHI, LTD.) 7 August 1998 (1998. 8. 7) * abstract *	1,2
A	US 5,579,486A (APPLE COMPUTER, INC.) 26 November 1996 (1996. 11. 26) * abstract *	1,2
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search		Date of mailing of the international search report
23 MAY 2003 (23.05.2003)		24 MAY 2003 (24.05.2003)
Name and mailing address of the ISA/KR  Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140		Authorized officer SHIN, Jun Ho Telephone No. 82-42-481-8129 